

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:  
John D. Hottovy et al.

Serial No.: 10/660,990

Filed: September 13, 2003

For: Loop Reactor Apparatus and  
Polymerization Processes with  
Multiple Feed Points for Olefins  
and Catalysts

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/Floron C. Faries/

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Sir:

**SUPPLEMENTAL REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41**

This Supplemental Reply Brief is being filed in response to the Supplemental Examiner's Answer mailed on December 10, 2007. This Reply Brief addresses the Examiner's misunderstanding of the technology at issue, as well as the Examiner's continuing pattern of stretching the teachings of the prior art beyond their reasonable limits in order to reach the subject matter taught and claimed by Appellant. Further, Appellants refer the Board to the previously-submitted Appeal Brief and Reply Brief.

***Deficiencies of Double Patenting Rejections***

In the Final Office Action, the Examiner formulated four separate double-patenting rejections. However, the Examiner did not show a correspondence between the present claims and the claims of the four cited patents, as required. *See* M.P.E.P § 804. Moreover, the Examiner goes beyond what is permissible in relying on the specifications to interpret the cited claims.

Appellants emphasize that features of the present claims are not obvious variants of the claims in the cited patents. The claims of the cited patents make no reference to the number of monomer feeds or to an arrangement of monomer feeds. It is *not* obvious that the cited claims would incorporate more than one monomer feed or a symmetrical arrangement, as presently claimed. *See* M.P.E.P § 804. Indeed, the cited references do not even contemplate the need or benefit of such a symmetrical spacing. Moreover, Appellants traverse the Examiner's contention that two monomer feeds around the loop reactor would always be symmetrical. *See* Supplemental Examiner's Answer, page 8. After all, the loop reaction zone is typically not a simple loop. In addition, Appellants strongly take exception to the Examiner's comment that "the monomer feeds being symmetrically arranged around the reactor" is a minor detail. *See* Supplemental Examiner's Answer, pages 7-8. To be sure, Appellants do not believe that the feature of a symmetrical arrangement of monomer feeds is a minor detail or that it is found in the cited references.

Appellants believe the Examiner is clearly employing impermissible hindsight. In view of the foregoing, Appellants respectfully request that the Board direct the Examiner to withdraw the double patenting rejection and allow the claims.

***Deficiencies of the § 112 Rejection***

In the Final Office Action, claims 5 and 8 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Examiner reiterated in the Supplemental Reply Brief that the percentage of the monomer was not defined. Appellants respectfully traverse this contention.

The base of the percentage of monomer (e.g., ethylene) is defined. *See, e.g.*, Application, Examples I and II, pages 11 and 12, ¶¶ 36 and 27 (explaining that to calculate the percent ethylene, the “pounds of ethylene” in the reactor are divided by the “pounds of the liquid contents in the reactor”). Indeed, the monomer concentration is expressed as a weight percent of the liquid contents in the reactor. *See id.* Without a doubt, undue experimentation is *not* required by one of ordinary skill in the art to make and use the presently-claimed invention. Moreover, the calculation basis of the monomer (e.g., ethylene) concentrations in percent is clearly described in the specification and need not be expressly stated in the claims. *See, e.g.*, Application, Examples I and II, pages 11 and 12, ¶¶ 36 and 27; *see also Phillips v. AWH Corp.*, 75 U.S.P.Q.2d 1321, 1326 (Fed. Cir. 2005) (*en banc*) (citations omitted) (explaining that the specification is the primary basis for construing the claims).

With regard to claim 5, it should be noted that claim 5 expresses the swing in monomer concentration as an absolute difference in percentage (e.g., 1.05%), in which Appellants believe to be a well-known methodology in the art. *See, e.g.*, Application, page 2, ¶ 8; page 6 ¶¶ 19 and 29; pages 11 and 12, ¶¶ 36 and 27; *see also Collegenet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 75 U.S.P.Q.2d 1733, 1738 (Fed. Cir. 2005) (quoting *Phillips v. AWH Corp.*, 75 U.S.P.Q.2d 1321, 1326) (holding that derivation of a claim term is based on usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art). Further, a patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 18 U.S.P.Q.2d at 1332.

The Examiner asserted incorrectly that the Examples I and II in the present specification are inconsistent with claim 5 (and apparently claim 8). *See* Supplemental Reply Brief, page 9. However, the basis of this assertion is not clear. First, Appellants stress that the methodology of the Examples and the present claims is consistent. Second, Appellants note that the numerical value of Example I is captured within claim 5. Indeed, in Example I, the swing in monomer concentration through the loop reactor is 0.66% (from 4.27 % to 4.93 %), which falls in the claimed “1.05 % or smaller.”

In sum, Appellants respectfully assert that the claims 5 and 8 are clear to one of ordinary skill in the art, and are enabled. *See, e.g.*, Application, page 2, ¶ 8; page 6 ¶¶ 19 and 29; pages 11 and 12, ¶¶ 36 and 27; *see also Phillips* at 1326 (explaining that one should rely heavily on the written description for guidance as to the meaning of the claims). In view of

the foregoing, undue experimentation is *not* required by one of ordinary skill in the art to make and use the presently-claimed invention. *See, e.g., U.S. v. Telectronics, Inc.*, 857 F.2d at 778. Claims 5 and 8 are enabled. Accordingly, Appellants respectfully request that Board direct the Examiner to withdraw the rejections of claims 5 and 8 under 35 U.S.C. § 112 and allow the claims.

***Independent Claims – Deficiencies of the § 102(b) Rejection based on Hottovy’235***

Independent claim 1, as amended, recites “introducing an olefin monomer to a loop reaction zone through a plurality of monomer feeds, wherein the monomer feeds are substantially symmetrically arranged *around* the loop reaction zone.” (Emphasis added). Independent claim 24 recites “wherein the monomer feeds and the product take-offs are arranged substantially symmetrically *about* the loop reactor.” (Emphasis added). In contrast, Hottovy ‘235 is absolutely devoid of arranging monomer feeds and/or product take-offs *substantially symmetrically around* the loop reactor. Therefore, Hottovy ‘235 cannot anticipate claims 1 and 24, or their dependent claims.

The Examiner asserted incorrectly that two feeds would *always* be symmetrical about the loop reactor. The Examiner contended that “two feeds would have a symmetric plane if they are on the same level of the loop and a C<sub>2</sub> symmetry if they are not on the same level of the loop.” *See* Supplemental Reply Brief, page 11. However, contrary to the Examiner’s assertion, two feeds (or more) will *not* always be symmetrical. After all, a loop reaction zone is typically not a *simple* loop. *See, e.g., Application, Figure 1.* Instead, loop reaction zones

typically have multiple vertical and horizontal legs or segments. *See, e.g.*, Application, ¶¶ 24 and 25; Figure 1. Undeniably, the multiple dissimilar segments of the loop reactor make clear that two feeds will *not* always be symmetrical. In addition, even for a simple loop configuration, which is not present or necessary in this context, two feeds would not always be symmetrical *around* a given loop reaction zone as disclosed and claimed. In view of these reasons, Appellants respectfully request that the Board direct the Examiner to withdraw the rejection under 35 U.S.C. § 102 and allow the claims.

***Dependent Claims – Deficiencies of the § 102(b) Rejection based on Hottovy '235***

Furthermore, while the dependent claims are patentable because of their dependency on an allowable base claims, these dependent claims are also patentable by virtue of the subject matter they separately recited. For example claim 2 recites wherein the catalyst is fed to the loop reaction zone through a plurality of catalyst feeds. In contrast Hottovy '235 discloses only a single catalyst feed (positioned upstream of the impeller 22). *See* Hottovy, col. 4, lines 6-15. Further, appellants traverse the Examiner's contention that it is necessary to have more than one catalyst feed to maintain a constant monomer concentration throughout the reactor. Indeed, Appellants believe that loop reactor systems, including those of the size of that disclosed in Hottovy '235, traditionally have not utilized more than one catalyst feed.

Claim 4 recites wherein the product take-offs (e.g., via continuous take-off mechanism 34) are substantially symmetrically arranged around the loop reaction zone. Hottovy '235 fails to disclose a symmetrical arrangement of product take-offs.

Claim 6 recites wherein the plurality of monomer feeds comprises at least one monomer feed per 800 feet of reactor length. Hottovy '235 is absolutely devoid of this feature. Appellants strongly traverse the Examiner's contention that such a feature must exist in Hottovy '235. *See* Examiner's Answer, page 6. Indeed, Appellants know of loop reactors (smaller and larger than those disclosed in the Hottovy examples) currently in operation that do not have at least one monomer feed per 800 feet of reactor length.

Claim 9 recites that measuring the concentration of the olefin monomer in the withdrawn portion (e.g., in conduit 36) of the fluid slurry, and adjusting the introduction of the olefin monomer (e.g., via control valve 32) in response to the measured concentration. In contrast, Hottovy '235 is absolutely devoid of this feature. Further, Appellants strongly traverse the Examiner's contention that such a feature *must* exist in Hottovy' 235. *See* Examiner's Answer, pages 5-6. Indeed, Appellants believe, based on the art at the time of the filing of the Hottovy '235, that at most, the monomer concentration in the Hottovy '235 system is measured in the monomer/diluent feed stream upstream of the reactor, and not measured in the reactor or at the reactor discharge.

Claim 10, which depends from claim 9, further states wherein the introduction of the olefin monomer is adjusted (e.g., via control valve 32) so that a different amount of the olefin monomer is fed at one monomer feed than the amount of the olefin monomer fed at another monomer feed. *See id.* Claim 14 recites wherein each of the monomer feeds (e.g., control valves 32) is separately controlled. *See id.* In contrast, Hottovy '235 merely mentions that the

monomer is introduced to the reactor. Hottovy '235 plainly does *not* address the control scheme of the monomer feed, in general, much less the specific features recited. Further, Appellants traverse the Examiner's contention that such monomer feeds *must* be controlled separately. *See* Examiner's Answer, pages 5-6. Appellants strongly disagree with the Examiner's reasoning for such a characterization, and believe the reasoning to be inaccurate. *See id.* Appellants do not agree that such feeds *must* be controlled separately. Further, Applicants also traverse the Examiners incorrect assertion that the Hottovy' 235 reactor is a large capacity reactor. *See id.*

In view of the foregoing, Appellants respectfully emphasize that the present dependent claims are patentable over Hottovy '235 by virtue of the subject matter they separately recite. Accordingly, for the additional reason, Appellants respectfully request that the Board direct the Examiner to withdraw the rejection of dependent claims.

***Examiner's Apparent Assertions of Inherency***

In the Examiner's Answer, the Examiner stated that features recited in the present claims *must* be present in the Hottovy '235 system. For example, the Examiner stated that "the concentration of the olefin monomer in the withdrawn portion of fluid slurry[from the reactor] *must* be measured," and "that there *must* be multiple monomer feeds for monomers and catalyst around the rather long loop reactor at regular intervals." *See* Examiner's Answer, page 5 (emphasis added). However, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present,

and that it would be so recognized by persons of ordinary skill. *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999). In contrast, here, these features are plainly not necessarily present in Hottovy '235 because many loop reactor systems in the art (of similar size to the Hottovy '235 reactors) do not possess these features, i.e., do not measure concentration of monomer in the reactor discharge, and do not have more than one monomer feed or more than one catalyst feed. The Examiner has not met the required evidentiary burden regarding the principle of inherency. *See Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

Lastly, along these lines, Appellants would like to address comments made by the Examiner in the Supplemental Reply Brief. The Examiner asserted incorrectly that "one would immediately anticipate four symmetrical continuous take off appendages in the loop reactor." *See* Supplemental Reply Brief, page 11 (discussing the four segments 16 of Hottovy '235). The Examiner explained that "[i]n order to keep the monomer concentration and catalyst concentration to be same throughout the whole loop reactor, thus constant polyolefin take off rate, one would anticipate four monomer and catalyst feeds respectively to be similarly symmetrically arranged relative to the four take off appendages around the loop reactor." *See* Supplemental Examiner's Answer, pages 11-12. To the contrary, if there are more than one feed or product take-off, such feeds or take-offs do not need to be symmetrically arranged around the loop reactor. Indeed, Appellants believe that Hottovy '235 just does not contemplate a symmetrical arrangement of either a product take-off, a monomer feed, or a catalyst feed. To be sure, Appellants believe that if Hottovy '235 considered

deviation of monomer concentration at all, it viewed such deviation concentration through the reactor as acceptable. Appellants also believe that many other considerations in the art impact the arrangement of product take-offs or feeds, if there is more than one of each. Such considerations may include, for example, the economics of the initial capital expenditure and construction of the loop reactor system and associated systems (feed systems and downstream systems), the efficient layout of the feeds, loop reactor, and take-offs and the associated piping, operating and maintenance access to piping, valves, and equipment, and so on.

The Examiner also stated incorrectly that there “must be multiple feeds for monomers and catalyst around the rather long loop reactor at the regular intervals to compensate the monomer being consumed for the formation of the olefin polymer product and the catalyst unavoidably deactivated in the polymerization media.” *See* Supplemental Examiner’s Answer, page 12. To the contrary, again, such an assertion is simply not true. Appellants do not believe that the catalyst will become unavoidably deactivated, even for loop reactor having a single monomer and a single catalyst feed. This assertion by the Examiner demonstrates a misunderstanding of the technology at issue. Appellants know of large loop reactors in the art that have only one monomer feed and only one catalyst feed. Further, in instances in the art where there is more than one monomer feed, these monomer feeds are not arranged symmetrically, but are arranged for other reasons, such as access.

Lastly, the Examiner further stated incorrectly that “each monomer feed must be separately controlled for Hottovy’s large capacity reactor in order to keep the monomer

concentration and polymer production rate at constant.” Again, Appellants know of loop reactors in industry having two separate monomer feeds are not controlled independently, and that many other factors may play a role in whether to have more than one monomer feed and to decide on the arrangement.

***Request Removal of Kendrick***

In the Final Office Action, the Examiner rejected claims 1-4, 6, 7, 9-15, and 21-27 under 35 U.S.C. § 102(b) as being anticipated by Kendrick et al. (US 2002/0173598 A1, now US Patent No. 6,833,415). However, this rejection is moot because Appellants have elected to remove Kendrick et al. (US 2002/0173598 A1, now US Patent No. 6,833,415). Kendrick is not valid prior art because Appellants, in a previous Response (which is herein incorporated by reference), elected to remove Kendrick et al. (US 2002/0173598 A1, now issued as US 6,833,415) under 37 C.F.R. § 1.131. *See* Response to Final Office Action Mailed February 24, 2005, pages 10-17. Appellants respectfully assert that the previously-submitted Rule 131 Declaration and the accompanying exhibits sufficiently establish an earlier date of the invention of the subject matter disclosed and claimed in the present application. *See* Rule 131 Declaration of Donald W. Verser; Exhibits C, D, and E. These documents establish conception prior to the effective dates of the cited reference and, furthermore, establish diligence during the critical period from just prior to the effective date of the cited reference until constructive reduction to practice of the present application. *See* 37 C.F.R. § 1.131(b); M.P.E.P. §715.07(III). Therefore, Appellants believe that the cited reference should be

removed pursuant to 37 C.F.R. § 1.131, the corresponding rejection withdrawn, and the claims allowed.

***Appellants Decline to Provoke an Interference with Kendrick et al. (US 6,833,415)***

With regard to Kendrick et al. (US 6,833,415), Appellants believe the appropriate path is to remove the Kendrick et al. (US 6,833,415) via the previously-submitted Rule 131 Declaration, as discussed above. If the Examiner disagrees with Appellants and believes that “the reference is claiming the same patentable invention,” and therefore, the previously-submitted “declaration of June 27, 2005 is inappropriate under 37 CFR 1.131(a),” it is the Examiner’s responsibility to initiate the interference, not Appellants. *See* M.P.E.P. Chapters 800 and 2300. Appellants respectfully remind the Board that the Examiner is required to either remove the reference under 37 C.F.R. § 1.131 or provoke an interference. *See* M.P.E.P. § 2306. Appellants note that if the Examiner provokes an interference, the Examiner is required to suggest claims for the interference. *See* M.P.E.P. Chapter 2300.

**Conclusion**

Based upon the above points of clarification in conjunction with the arguments made in the previously filed Appeal Brief, Appellants believe that the claims are clearly allowable over the cited art. The Examiner's rejections, therefore, cannot stand. Appellants respectfully request that the Board withdraw the outstanding rejections and pass the present application to allowance.

Respectfully submitted,

Date: February 11, 2008

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